




UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
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OFFICE OF
ENVIRONMENTAL ASSESSMENT

June 21, 2013

MEMORANDUM

SUBJECT: Review of the Incinerator Operating Limits Petition for Sumitomo Metal Mining Pogo, LLC – Alaska

FROM: 
Zach Hedgpeth, PE
Environmental Engineer, ESU, OEA

TO: Heather Valdez, Environmental Engineer
Tribal and Air Toxics Unit, OAWT

As you requested, I've reviewed the "Pogo Mine Initial CISWI Performance Test Incinerator Parameters/Operating Limits Petition", dated May 14, 2013. Pogo has submitted this petition under 40 CFR 60.2115 for specific operating limits to be established during the initial performance test and continuously monitored thereafter because the incinerator is uncontrolled.

I have the following comments regarding the petition:

1. *Parameters must be continuously monitored.* Although the petition proposes a set of specific parameters as alternative monitoring under §2115, the petition fails to state that these parameters will be continuously monitored as required by the NSPS. The petition describes procedures that require the incinerator operators to inspect and verify that specific "set points" within the incinerator controls are set to comply with the specified range or value for each parameter (detailed below). This approach is not in accordance with the NSPS, which specifically states in §2115 that the specific operating limits must be "established during the initial performance test and continuously monitored thereafter". For each proposed parameter, the facility should be required to submit a monitoring proposal detailing the monitoring equipment, the location of the equipment within the incinerator or exhaust system, the proposed averaging time over which compliance with the requirement will be determined (if appropriate), and the data collection and management system proposed to collect, process, and store the monitoring data. I also have the following comments regarding the specific monitoring parameters proposed in the petition:

- a. *Charge weight.* On page 5, the petition states that each batch of waste will be weighed using a scale with $\pm 10\%$ accuracy with respect to the waste load capacity. In several places, the petition proposes a per charge limit of 150 pounds (lbs) of waste. While I agree that charge weight is one of several key parameters impacting incinerator performance, and that the proposed monitoring is sufficient, the proposed maximum charge weight of 150 lbs conflicts with other information contained in the petition documents. Specifically, waste charges of 150 lbs every 15 minutes (the proposed load interval) results in a burning capacity of 600 lb/hr. However, page 1 of the petition lists the burn rate of this incinerator as 480 lb/hr. Using the calculation approach given in section 7.5.3 on page 21 of the manufacturer's operating instructions, a burn rate of 480 lb/hr and a load interval of 15 minutes results in a maximum per charge weight limit of 120 lbs. This discrepancy should be addressed.
- b. *Load interval.* On page 3, the petition proposes a maximum load interval of 15 minutes, and states that the load interval "set point" in the incinerator control system will be observed to comply with this requirement as part of each incinerator startup sequence. While I agree that load interval is one of several key parameters impacting incinerator performance, I do not agree that simply verifying the equipment set point complies with the NSPS requirement of continuous monitoring. I recommend that the facility be required to record the time that each load of waste is charged to the incinerator and that this data is used to calculate each actual load interval in determining compliance with the required value.
- c. *Primary combustion chamber temperature.* On page 4, the petition proposes a minimum primary combustion chamber temperature of 1,200° F, and states that the primary combustion chamber temperature "set point" in the incinerator control system will be observed to comply with this requirement as part of each incinerator startup sequence. While I agree that primary combustion chamber temperature is one of several key parameters impacting incinerator performance, I do not agree that simply verifying the equipment set point complies with the NSPS requirement of continuous monitoring. I recommend that the facility be required to continuously monitor and record the primary combustion chamber temperature at all times the incinerator is in operation. All data should be time-stamped for comparison with waste charging data to ensure that the temperature in the primary combustion chamber is in compliance with the requirement whenever waste is being combusted. Also, there appears to be conflicting information regarding the primary combustion chamber temperature given within the manufacturer's information. On page 72 of 75 within the petition pdf submittal the setting for the primary burner on/off control is set at 1,400° F. This apparent discrepancy should be addressed.

- d. *Primary combustion chamber burn time.* On page 4, the petition proposes a minimum burn cycle time of 5 hours for the primary combustion chamber, and states that the cycle time “set point” in the incinerator control system will be observed to comply with this requirement as part of each incinerator startup sequence. While I agree that burn cycle time is one of several key parameters impacting incinerator performance, I do not agree that simply verifying the equipment set point complies with the NSPS requirement of continuous monitoring. I recommend that the facility be required to record the burn cycle time following the last waste charge each time the incinerator is operated and that this data be used to calculate the actual burn cycle time in determining compliance with the required value.
- e. *Secondary combustion chamber temperature.* On page 4, the petition proposes a minimum secondary combustion chamber temperature of 1,832° F, and states that the secondary combustion chamber temperature “set point” in the incinerator control system will be observed to comply with this requirement as part of each incinerator startup sequence. While I agree that secondary combustion chamber temperature is one of several key parameters impacting incinerator performance, I do not agree that simply verifying the equipment set point complies with the NSPS requirement of continuous monitoring. I recommend that the facility be required to continuously monitor and record the secondary combustion chamber temperature at all times the incinerator is in operation. All data should be time-stamped for comparison with waste charging data to ensure that the temperature in the secondary combustion chamber is in compliance with the requirement whenever waste is being or has been recently combusted. Also, there appears to be conflicting information regarding the secondary combustion chamber temperature given within the manufacturer’s information. On page 72 of 75 within the petition pdf submittal the setting for the secondary burner hi/lo control is set at 1,800° F. This apparent discrepancy should be addressed.
- f. *Secondary combustion chamber burn time.* On page 4, the petition proposes a minimum burn cycle time of 1 hour after the end of the 5-hour primary chamber burn cycle for the secondary combustion chamber, and states that the cycle time “set point” in the incinerator control system will be observed to comply with this requirement as part of each incinerator startup sequence. While I agree that burn cycle time is one of several key parameters impacting incinerator performance, I do not agree that simply verifying the equipment set point complies with the NSPS requirement of continuous monitoring. I recommend that the facility be required to record the secondary chamber burn cycle time each time the incinerator is operated and that this data be used to calculate the actual burn cycle time in relation to the primary chamber 5-hour burn cycle in determining compliance with the required value.

2. *Residence time.* The exhaust gas residence time, particularly in the secondary combustion chamber, is a key parameter tied to the air pollutant emissions from incinerators, yet the petition does not propose methods and equipment to monitor this parameter either directly or indirectly. In my opinion, the best approach would be to require the facility to install a continuous flow rate monitor on the exhaust stack of the incinerator. However, due to the extremely high temperatures, this instrumentation may not be available, or may be very expensive. I recommend that we ask the facility to explore the availability and cost of a continuous flow rate monitor for this application and submit this information to Region 10.

Should Region 10 determine that the flow rate monitor is unavailable, cost prohibitive, or impractical for some reason, there are at least two alternative approaches I am aware of which would help address this issue, although less directly. The first would be to ensure that during the emission testing, the source tester collects flow rate data at a reasonable frequency throughout each test run and burn cycle, and then examine this data to gain an understanding of its variability through the incinerator burn/operating cycle. If we observe that the flow rate variability is reasonably small (for example, less than a factor of 2 or 3), this would reduce my concern regarding residence time. In this case, I would be comfortable relying on stringent waste characterization and combustion chamber temperature monitoring, as has been described by Stef Johnson at the EPA Emission Measurement Center.

The second approach would be to require continuous monitoring of an appropriate fan parameter (such as amperage or horsepower) which is related to fan flow rate as shown by the appropriate fan curves. Based on the variability of the fan amperage during the emission testing, an acceptable operating range for each fan could be developed to ensure that the combustion air supply and the resulting gas flow rate during subsequent incinerator operations do not exceed that which occurred during the testing to an unacceptable degree.

3. *Parametric values during testing.* As discussed above, in order to comply with the NSPS petition requirements in §2115, the various operating parameters must be continuously monitored during and subsequent to emission testing. It should be noted that the actual measured values as occur during the emission testing must be at or near the ranges and/or minimum/maximum values proposed by the facility. For example, if the primary combustion chamber temperature is consistently around 1,400° F during testing, it would not make good technical sense to allow the ongoing operating limit to remain at the proposed value of 1,200° F.
4. *Waste composition.* On page 1, the petition states that “type 2 waste” will be combusted in the incinerator. This description does not provide sufficient detail regarding the waste stream. The specific sources of the waste and proportions from each source must be documented to ensure that the waste combusted during the emission testing is representative of the future waste stream sent to the incinerator for disposal. Subsequent to the emission testing, ongoing characterization of the

waste stream is necessary to ensure that the waste mix continues to be similar to that combusted during the emission testing. Based on the incinerator operation, waste monitoring should be on a batch load basis to ensure that the waste mixture is consistent and similar to that burned during testing. I recommend that the facility be required to submit a waste characterization plan to address these issues. Additionally, the facility should be required to document any waste segregation practices in place at the facility. For example, this would include any plan in place to divert elements of the hazardous waste stream such as batteries to ensure they are not combusted in the incinerator.

5. *Incinerator fuel.* The petition and manufacturer's operating instructions are not consistent with regard to the fuel used by the incinerator. The petition states the unit is fired on propane and makes no mention of waste oil. The manufacturer's instructions describe combustion of waste oil but make no mention of propane. Whatever fuel is fired during the performance test will establish the allowable fuel to be used in future operations. I recommend that the facility be required to clarify the incinerator primary fuel, and whether waste oil is to be burned in the incinerator.
6. *Monitoring plan requirements.* In addition to the recommendations above, the facility must ensure that all monitoring plans meet the specific requirements contained within 40 CFR 60.2115.

If you have any questions about these comments, please call me at 3-1217.

C: Mark Filippini, Unit Manager, ESU, OEA
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